NON-PUBLIC?: N
ACCESSION #: 9407210068
LICENSEE EVENT REPORT (LER)

FACILITY NAME: LaSalle County Station Unit 2 PAGE: 1 OF 03

DOCKET NUMBER: 05000374

TITLE: Reactor Scram Due To Tripping the Feed Breaker to Switchgear 231A/B
EVENT DATE: 06/21/94 LER #: 94-004-00 REPORT DATE: 07/14/94

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: John Ullrich, TELEPHONE: (815) 357-6761
System Engineering,
Extension 3080

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: EL COMPONENT: SCR MANUFACTURER:
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On June 21, 1994, Unit 2 was in operating condition 1 (Run) operating at approximately 1110 MWe. At approximately 2230 hours, the feed breaker from 6900 Volt Switchgear 251 to 6900-480/277 Volt Transformers 231A and 231B tripped. The supply breaker to Transformers 231A and 231B opening resulted in the loss of power to numerous pieces of balance of plant equipment. Several air operated valves were affected by the loss of power: the "A" Turbine Driven Reactor Feed Pump Minimum Flow valve failed open, all Condensate/Condensate Booster Minimum Flow valves failed open, and the "A" Heater Drain Pump Forward valve failed closed. The failing of these valves resulted in a reduction of feedwater flow to the reactor. Due to this loss of feedwater flow, a Level 3 reactor scram was received. The plant responded as expected to this event.

The cause of the breaker tripping was a degraded trip output Silicon Controlled Rectifier (SCR) on the Transformer 231B 6900 KV ground fault relay.

This event is being reported to the Nuclear Regulatory Commission as a Licensee Event Report in accordance with 10CFR50.73(a)(2)(iv) due to an actuation of an Engineered Safety Feature (ESF) and unplanned automatic Reactor Protection System (RPS) reactor Scram.

END OF ABSTRACT

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as XX!.

A. CONDITION PRIOR TO EVENT

Unit(s): 2 Event Date: 6/21/94 Event Time: 2230 Hours

Reactor Mode(s): 1 Modes(s) Name: Run Power Level(s): 99.7%

B. DESCRIPTION OF EVENT

On June 21, 1994, Unit 2 was in Operational Condition 1 (Run) operating at approximately 1110 MWe. At 2230 hours the feed breaker from 6900 Volt (V) Switchgear 251 to 6900-480/277 V Transformers 231A and 231B tripped. The supply breaker to Transformers 231A and 231B opening resulted in the loss of power to numerous pieces of balance of plant equipment. Several air operated valves were affected by the loss of power: the "A" Turbine Driven Reactor Feed Pump (TDRFP) (FW/C34) SJ! Minimum Flow valve failed open, all Condensate/Condensate Booster (CD/CB) SD! Minimum Flow valves failed open, and the "A" Heater Drain (HD) SN! Pump Forward valve failed closed. The failing of these valves res
lted in a reduction
of feedwater flow to the reactor. Due to this loss of feedwater flow, a Level 3 Reactor scram was received.

A review of the Hathaway (AN) IQ! alarm typer revealed that numerous 125 V Panel 211X/Y Ground Detector Alarms had been received throughout the day. At approximately 2206 hours, the 125 V Panel

211X/Y Ground Detector Alarm began chattering in the Control Room. An Equipment Operator was dispatched but the ground had cleared by the time he had reached the panel, and there was no indication of a problem. Approximately 20 minutes later, the 125 V Panel 211X/Y Ground Detector Alarm began chattering again followed shortly by the feed breaker tripping.

An inspection of the feed breaker revealed that the cause of the trip was due to an actuation of a ground fault protective relay. This relay is designed to protect the 6900 V/480 V transformer 231B and the associated cabling from a phase-to-ground fault. The Ground Fault Protective Relay for Transformer 231B receives its power from 211X, and is suspected to be the source of the ground alarms.

C. APPARENT CAUSE OF EVENT

Extensive electrical testing, i. e. megger tests, resistance measurements, and ground fault relay calibration, was performed on the 231A and 231B transformers, associated cabling, and protective relay wiring. The DC power consumption of the transformer

C. APPARENT CAUSE OF EVENT (CONTINUED)

231B 6900 V ground fault relay was observed to be approximately 33% higher than four other similar relays tested. A fast transient Surge Withstand Capability (SWC) test was performed, which places pulses on the DC supply to the relay. This simulates fast transient noise on the DC supply to the relay. A properly functioning relay should not trip when this test is performed. The 231B 6900 V ground fault relay tripped each time this test was performed. The trip output SCR was replaced in the relay, and when the fast transient SWC test was performed, the relay did not trip. The relay also passed all other calibration tests.

The feed breaker from 6900 V Switchgear 251 to 6900-480/277 V Transformers 231B tripped due to a faulty trip output Silicon Controlled Rectifier (SCR) on the transformer 231B 6900 V ground fault relay. The SCR triggered on the DC grounds, which was similar to an noise signal on the DC supply to the protective relay.

D. SAFETY ANALYSIS OF EVENT

This event was of minimal safety significance because the plant responded as designed for an event of this type.

E. CORRECTIVE ACTIONS

1. Extensive electrical checks were made to the 231A and 231B transformers, associated cabling and protective relaying to verify no electrical faults.

2. The 231B 6900 V ground fault relay and current transformer were replaced.

F. PREVIOUS EVENTS

None

G. COMPONENT FAILURE DATA

Manufacture Nomenclature Cat. Number MFG Part Number

ITE Imperial Corp. Relay Type GR-5 202D6141UL, Rev. 0 N/A

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Commonwealth Edison
LaSalle County Nuclear Station
2601 N. 21 st. Rd.
Marseilles, Illinois 61341
Telephone 815/357-6761

July 14, 1994

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Licensee Event Report #94-004-00, Docket #050-374 is being submitted in accordance with 10CFR50.73(a)(2)(iv).

D. J. Ray
Station Manager
LaSalle County Station

DJR/JU/lja

Enclosure

cc: NRC Region III Administrator
NRC Senior Resident Inspector
INPO - Records Center
IDNS Resident Inspector
Nuclear Licensing Administrator

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